

BH+A's verification process indicated that the Executive Office of Elder Affairs recommendation is sufficient for meeting the parking needs of average daily programming. However, another important consideration for senior centers is that parking demand dramatically escalates during special events such as a holiday meal, a meeting of a large organization comprised mostly of senior members, or special entertainment programs. At these times, visitors typically arrive by car in numbers of 1 to 2 people per car. Based on the experience of other senior centers of similar size, it is not uncommon for such events to draw 250 people. This equates to a need for 200 parking spaces. Based on conversations with the Program Director of the Needham Senior Center, it is anticipated that such events could occur three times per month, identical to what is seen at other senior centers. Since it is not cost-effective to provide a 200 space parking area for a facility that needs half that number 90% of the time, most senior centers take the approach of a) encouraging carpooling and the use of mass transit for large events, and b) utilizing nearby overflow parking to handle the peak demand. This strategy would be most easily employed at the downtown sites (Greene's Field and Rosemary Hill) because of overflow parking options nearby and proximity to bus stop. Ridge Hill will need to assess parking capacity for large events. The multi-purpose room is expected to accommodate 200 people based on 15 square feet per participant if seated in rows of chairs. The State Building Code has a lower number for seated occupancy (7 square feet per person in chairs). BH+A used the higher number to account for the fact that the user population may include a higher number of visitors using wheelchairs, walkers, and canes.

There are other considerations for the design of senior center parking areas. Older drivers are statistically some of the safest drivers on the road, yet it is important to be aware of declining physiological functioning and how that can be addressed in parking lot design, and particularly in structured parking design. Some of the important factors to be considered and planned for include:

- Extra handicap parking spaces with close proximity to entrances
- Slightly wider parking spaces and circulation aisles
- Careful planning of particular areas that are statistically more problematic for older drivers
- Pavement markings and signage clearly indicating directionality
- Ample room for pick-up and drop-off areas
- Safe placement of pedestrian movement corridors
- Placement of parking areas for the reduction of glare
- Ample lighting
- Safe and efficient access for meals program vehicles and other deliveries

## PARKING PROGRAM BY ZONING USE COUNTS AND BY ROOM USE COUNTS

	by zoning calculation					by room population					
	room area	occupancy load	calculation per MA Building code	actual occupants	parking count	10:00 AM		12:00 AM		2:00 PM	
						occupants	cars	occupants	cars	occupants	cars
<b>Lobby/Reception</b>											
Lobby / Reception / Waiting	500					2		4		2	
Open Storage for Coats	90										
Subtotal	590	6	1 per 100 gsf (business)	4		2.0	1.3	4.0	2.6	2.0	1.2
<b>Administrative Offices</b>											
Reception	100					1		1		1	
Executive Director	150					1		1		1	
Associate Director	100					1		1		1	
Volunteer / Transportation Coord.	100					1		1		1	
Trip Coord. / Reception, etc.	65					1		1		1	
Social Work Supervisor	100					1		1		1	
Outreach and Social Workers (2)	150					2		2		2	
General Staff											
Part-time admin. Assistant	65					1		1		1	
Volunteer desks (2) & table	200					2					
SHINE Director	150					1		1		1	
SHINE volunteer	100					1		1		1	
Small Meeting Room / Counseling	200										
Health / Other Services	100					1		1		1	
Copy / Supplies	100										
Coat Closet	10										
Subtotal	1,690	17	1 per 100 gsf (business)	14		14	12	12	10	12	10
<b>Program Spaces</b>											
Boutique / Gift Shop	100	1	1 per 100 gsf (business)	1		1		1		1	
Multi-Purpose Room	3,000	200	1 per 15 nsf (assembly)	200		40		120			
Multi-Purpose Room 2											
Lounge / Library	500	10	1 per 30 nsf (library/read)	10		4		2		4	
Reading Area											
Large Game Area	900	60	1 per 15 nsf (assembly)	20		12		10		12	
(1) Program Space: Fitness Studio			1 per 150 sf + 1 (exercise)								
	1,000	20		25		20				15	
(3) Program Space: Art Studio	650	43	1 per 15 nsf (assembly)	20		10		10		10	
(4) Program Space	650	43	1 per 15 nsf (assembly)	20		10		10		10	
(2) Program Space: Computers	500	33	1 per 15 nsf (assembly)	15		10		10		10	
(5) Program Space	500	33	1 per 15 nsf (assembly)	15		10				10	
(6) Program Space	500	33	1 per 15 nsf (assembly)	15		10				10	
(7) Program Space	500	33	1 per 15 nsf (assembly)	15		10				10	
(8) Program / main conf rm (20)											
Conference (20)	400	27	1 per 15 nsf (assembly)	20		10		10			
Library/Media Room	300	10	1 per 30 nsf (library/read)	5		5		5			
Screen Porch											
Music Room											
Drama / Black Box											
Woodworking											
Pottery											
Potting / Indoor Gardening											
Subtotal	9,500					152	100	178	117	92	61
<b>Food Service</b>											
Kitchen	500					3		3		1	
Office	100									1	
Pantry Storage	100										
Loading / Receiving	100										
Subtotal	800	4	1 per 200 gsf (kitchen)	3		3	3	3	3	2	2

## PARKING PROGRAM BY ZONING USE COUNTS AND BY ROOM USE COUNTS

	by zoning calculation					by room population					
	room area	occupancy load	calculation per MA Building code	actual occupants	parking count	10:00 AM		12:00 AM		2:00 PM	
						occupants	cars	occupants	cars	occupants	cars
<b>Restrooms</b>											
Womens	220	0									
Mens	220	0									
Companion Unisex Toilet	60	0									
Companion Toilet with Shower											
Mens Changing Rm w/Shower											
Womens Changing Rm w/Shower											
Subtotal	500										
<b>Support Spaces</b>											
Mechanical / Electrical / Sprinkler	450										
Storage for Program Rooms											
Multi-Purpose Room Storage	400										
Classroom Storage	100										
Health Equipment Storage	250										
Game Room Storage	70										
General Storage, 1st Floor	400										
Exterior Maintenance Storage	50										
Storage for Outdoor Furniture	500										
Miscellaneous Storage	200										
Custodian, 1st Floor	40					1		1		1	
Subtotal	2,460	8	1 per 300 gsf (storage)	1		1	1	1	1	1	1
Total Net Square Feet	15,540										
Grossing Factor	1.20										
Total Program Gross Area	18,650	583		403	134	172	118	198	134	109	75
		capacity		occupants	cars	occupants	cars	occupants	cars	occupants	cars

**To:** Joel Bargmann

**Re:** Proposed Senior Center, Needham, MA

**From:** Rick Bryant, Transportation Planning

**Date:** April 20, 2010

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### **Introduction**

The Town of Needham is looking to build a new senior center to serve a growing population of seniors in Needham. Three alternative sites are presently being evaluated by the Town. Herein are presented traffic, access and parking issues associated with the three sites.

### **Alternatives**

The three sites under consideration are referenced here as Greene's Field, Rosemary Hill and Ridge Hill. Figures 1, 2 and 3 show the locations of each site. The Greene's Field site is located in the Town center on Pickering Street. Pickering Street is located one block east of and parallel to Highland Avenue, Needham's main north-south street. It connects May Street to the north with Great Plain Avenue to the south. The Rosemary Hill site is also located near the Town center. This site is located on Rosemary Street north of the Town center and approximately one block west of Highland Avenue. It is also just east of the MBTA commuter rail line and Town library. The Ridge Hill site is located on Charles River Street on the western edge of Town approximately 2.5 miles from the Town center. Each of these sites is described in greater detail below with respect to traffic and access issues.

### **Methodology**

Tetra Tech Rizzo collected information for the three sites from a variety of sources. Field visits were made during commuter peak hours (and during school dismissal hours for the Greene's Field site) in March and April 2010. A meeting was also held with the site manager for the existing senior center in Town located at the Stephen Palmer Home (adjacent to Greene Field) to understand site operations and visitor travel patterns. The site manager also provided us with data pertaining to the travel patterns of existing site patrons. Additionally, travel characteristics were surveyed for seniors at a similar facility in Framingham, Massachusetts. Finally, a meeting was held with the Town police and fire departments to understand traffic control and emergency access issues at each site in April.



## **Greene's Field Site**

### ***Description***

Multiple variations of a plan for Greene's Field have been developed. The site (see Figure 1) is an existing rectangular recreational field oriented parallel to and fronting on Pickering Street. It abuts residential properties to the east, the existing senior center and senior housing at the Stephen Palmer Center to the north and Great Plain Avenue to the south. The various alternative plans move the proposed senior center building north and south along the site and in some cases include underground parking to preserve as much of the existing recreational field as possible. Vehicular access is proposed at various points along Pickering Street and at Great Plain Avenue.

Pickering Street will be a key part of the access plan for any of the Greene's Field alternatives. Pickering Street is approximately 24 feet wide and has parking on the east side. The southern end of Pickering Street meets Great Plain Avenue at a STOP-controlled T-intersection. Great Plain Avenue carries two travel lanes and a parking lane in each direction at this location. North of the site Pickering Street meets May Street at a four-way intersection with STOP control on Pickering Street. The St. Joseph's school is located on the west side of Pickering Street at May Street. School buses stop on Pickering Street southbound adjacent to the school. Student pick-up/drop-off activity also impacts Pickering Street with traffic entering the school grounds from Highland Avenue and exiting onto Pickering Street, by right-turns only, just north of the Stephen Palmer Home parking lot. School traffic also cuts through the Walgreen's parking lot south of the Stephen Palmer Home (entering the lot from Pickering Street) to return to or get to Highland Avenue. School pick-up/drop-off activity occurs from approximately 7:35 to 8:20 AM and from 2:30 to 3:15 PM. During these hours crossing guards and/or police details are used to control traffic at the May Street/Pickering Street intersection and at the school entrance at Highland Avenue. The traffic signal at May Street and Highland Avenue experiences some back-ups at these times due the increased vehicular and pedestrian traffic.

### ***Issues and Opportunities***

The potential driveway locations for the site are located on level, tangent sections of roadway and will generally afford safe and adequate sight lines. Removal of on-street parking within 25 feet of each driveway would be required to maintain clear sight lines.

Travel speeds on the area roadways are generally low due in part to the nature of the street network (Pickering Street does not generally function as a cut-through route). Providing site access along the southern end of Pickering Street would be preferred as it would provide greater separation from school activity. Direct access at Great Plain Avenue is less desirable due to the wider roadway width and higher speed on Great Plain Avenue.

At 24 feet wide with on-street parking Pickering Street is barely wide enough to accommodate two-way traffic flow. This also helps to slow traffic but poses a constraint on emergency vehicle

access. Widening the roadway by four-feet adjacent to Greene Field where on-street parking is currently provided would help to relieve this constraint without encouraging high travel speeds. Similarly, providing a bus pull-out for school buses arriving at Saint Joseph's school would benefit emergency vehicle access.

School dismissal related traffic congestion at the May Street/Highland Avenue intersection impedes access to the Greene's Field site from the north. Senior center activities should be scheduled to avoid traffic conflicts with Saint Joseph's school. Changes in existing traffic patterns (one-way versus two-way streets, pick-up/drop-off locations, etc.) could also be reexamined in the future, if necessary, to alleviate some of the existing traffic congestion. Traffic congestion is not an issue for the senior center during the morning student drop-off period as the senior center is not open during these hours.

Overall, the Greene's Field site is a viable location from a traffic perspective subject to implementation of the suggestions made above. It offers the advantage of proximity to the existing senior center, meaning that seniors are currently accustomed to traveling to this site and familiar with the roadway and traffic conditions surrounding the site. Also, its proximity to other city services and retail establishments accommodates multi-purpose trip making by seniors.

## **Rosemary Hill Site**

### ***Description***

The Rosemary Hill Site (see Figure 2) is located on the south side of Rosemary Street adjacent to the Rosemary Lake swimming facility. Rosemary Street is a two-lane, two-way roadway at this location and is approximately 30 feet wide with a sidewalk on the south side of the roadway. The driveway entrance is proposed approximately 200 feet west of the existing MBTA railroad crossing and 600 feet west of a signalized intersection with Highland Avenue. At this point Rosemary Street is on a moderate downgrade (east to west). Just west of the driveway location the grade increases. The grade to the west and vegetation to the east limit sight lines at the driveway entering Rosemary Street. The driveway itself will climb a grade to reach Rosemary Street. One alternative for this site would relocate the site driveway further west lessening the grade on the site driveway. However, this would cause the driveway to enter Rosemary Street along its steepest section and the entry would be at a skewed angle making it more difficult to turn right out of the site and left into the site.

### ***Issues and Opportunities***

The potential driveway locations for the site are challenging. At a minimum, vegetation to the east of the proposed driveway would need to be removed to provide a minimum safe sight triangle. The attached figure shows the recommended clearing area. Even with this clearing however, sight lines to the east may still be obscured at times by vehicles queued at the railroad crossing. Sight lines to the west are limited to 300 feet due to grade conditions. This distance is

adequate for speeds up to 38 miles per hour. Speeds were not measured at this location but generally appeared to be at or below 40 mph due the existing grade conditions.

Traffic volumes on Rosemary Street are heavier than those on Pickering Street but are not likely to cause unreasonable delays for traffic exiting the site.

The Rosemary Street site is centrally located and offers the benefit of accommodating multi-purpose trips by seniors. (The site is located proximate to the Town Library and a grocery store, sites that may presently be frequented by seniors.)

Overall, the Rosemary Lake site offers convenience by virtue of its location but presents less desirable access conditions. Development of the site would require at minimum that vegetation be removed to the east of the driveway to open up site lines (see Figure 4). Relocation of the proposed site driveway further west and down the hill from the current location is not recommended. Stopping and starting on the grade to enter and exit the site would be more difficult here particularly under slippery road conditions.

## **Ridge Hill Site**

### ***Description***

The Ridge Hill site (see Figure 3) is located on the north site of Charles River Street within existing Town-owned conservation land. A conceptual site plan is attached. The senior center buildings would be located a great distance from Charles River Street. A 0.35 mile long access road presently brings traffic into the property from Charles River Street. Charles River Street carries some through commuter traffic during peak hours however; the winding nature of the roadway maintains speeds in the 30 to 40 miles per hour range. (Speed limits are not posted near the site.) Traffic approaching the site from the Town center can take a short cut down Pine Street, a one-way residential street connecting Charles River Street with Central Avenue. Traffic returns to the Town center via the Charles River Street/Central Avenue intersection where a new traffic signal assists motorists turning left from Charles River Street to Central Avenue.

### ***Issues and Opportunities***

The existing driveway to the Ridge Hill property is located on the outside of a horizontal curve which generally affords safe sight lines. However, another curve in the roadway west of the driveway creates a sight distance constraint. Vegetation, including some mature trees, in the sight triangle, shown in the attached figure should be removed to provide safe sight lines (see Figure 5). The trees are located within the Ridge Hill Reservation.

The driveway into the Ridge Hill property is approximately 16 feet wide. This is barely adequate for two-way traffic flow. A widening and reconstruction of this roadway to a minimum width of 22 feet is recommended.

Motorists using Pine Street to access the site may be tempted to leave the site by way of the same route. However, since Pine Street is one-way westbound, it is recommended that adequate signage be installed on Charles River Street eastbound at Pine Street to prevent wrong-way entries.

Overall, the Ridge Hill location is a viable alternative provided that vegetation is cleared to enhance sight lines and that the entrance roadway can be widened. The remote location of this site will likely generate a majority of single-purpose trips for seniors. Scheduling events at the facility to also avoid conflicts with faster moving commuter traffic on Charles River Street is also advisable.

### **Parking**

Provision of adequate parking is a concern for all three alternative sites. Parking should be sufficient to provide a high level of service to seniors but not excessive. Construction of excess parking adds cost to the project and produces greater environmental impacts that must be mitigated.

Typically for this type of facility, the proposed parking supply would be based on the occupancy of the largest room at the facility. The largest room proposed for this facility can seat up to 200 people. Published parking ratios for “places of assembly” range from .25 to .50 spaces per person. (This implies full occupancy and a vehicle occupancy rate of two to four persons per car.) However, “places of assembly include churches and theatres where attendees (families and couples) are accustomed to traveling together. Based on a conversation with the existing senior center director, many seniors who visit the senior center do so in part because they live alone. These individuals are not inclined to share rides. Consequently, additional research was conducted to understand the travel patterns of seniors.

The director of the Needham Senior Center conducted a travel survey of over 350 seniors visiting the center over a week-long period. This survey showed that 77 percent of the visitors drove to the center and eight percent received rides from someone else. This implies a vehicle occupancy rate of 1.1 persons per vehicles. Tetra Tech Rizzo did a survey of motorists entering and exiting the Framingham, Massachusetts senior center during a busy midday period and also measured a vehicle occupancy rate of 1.1 persons per vehicle.

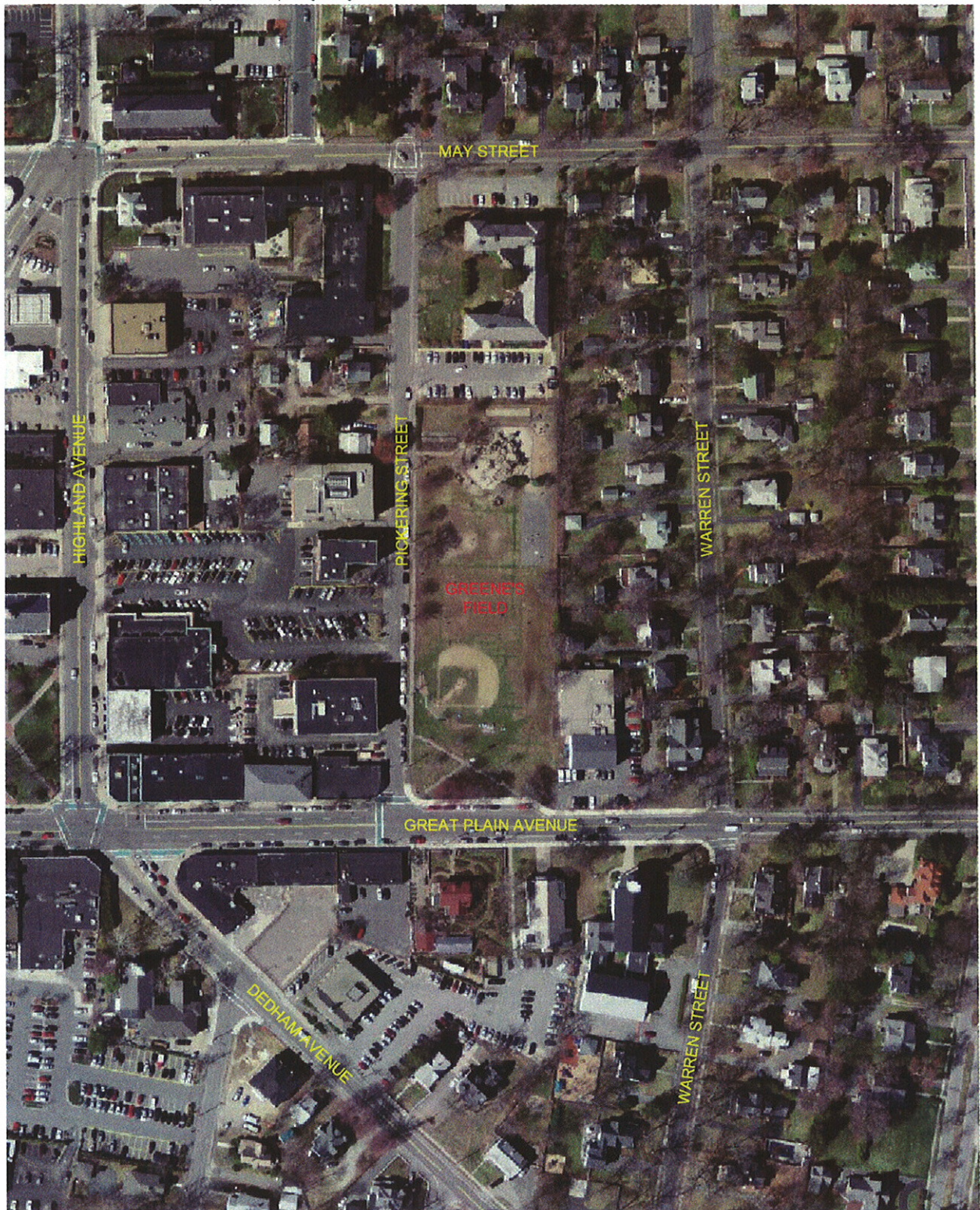
The Needham Senior Center survey also showed that not all visitors arrived by private automobile. Up to 13 percent of the visitors walked to the center or received a ride in the Council on Aging van. The use of alternative modes therefore can decrease the parking demand by up to 13 percent. Considering the local information regarding vehicle occupancy and mode choice, seating 200 people at the facility would generate a parking demand of 155 vehicles. Consequently, provision of approximately 155 spaces would provide adequate parking for the largest events anticipated at the site. However, full utilization of 155 spaces is only anticipated



on a limited number of dates when the large function room would be fully utilized. On such occasions special-event measures could be implemented to promote greater ride-sharing and use of alternative travel modes. This would allow fewer spaces to be built at the site and still meet normal “day to day” parking requirements.

The actual parking supply provided at the facility may vary by location. The Greene’s Field and Rosemary Lake sites are located in areas where off-site parking may be available to visitors. This is particularly true at the Greene’s Field site where on-street parking is presently used by seniors. Parking for the swimming facility could also accommodate visitors and/or employees at the Rosemary Lake site. These two sites may also effectively capture a number of walk in visitors. At the Ridge Hill site all daily parking and overflow parking would need to be provided on site and no reduction in parking demand should be assumed based on walk-in trips.





0 200 Feet

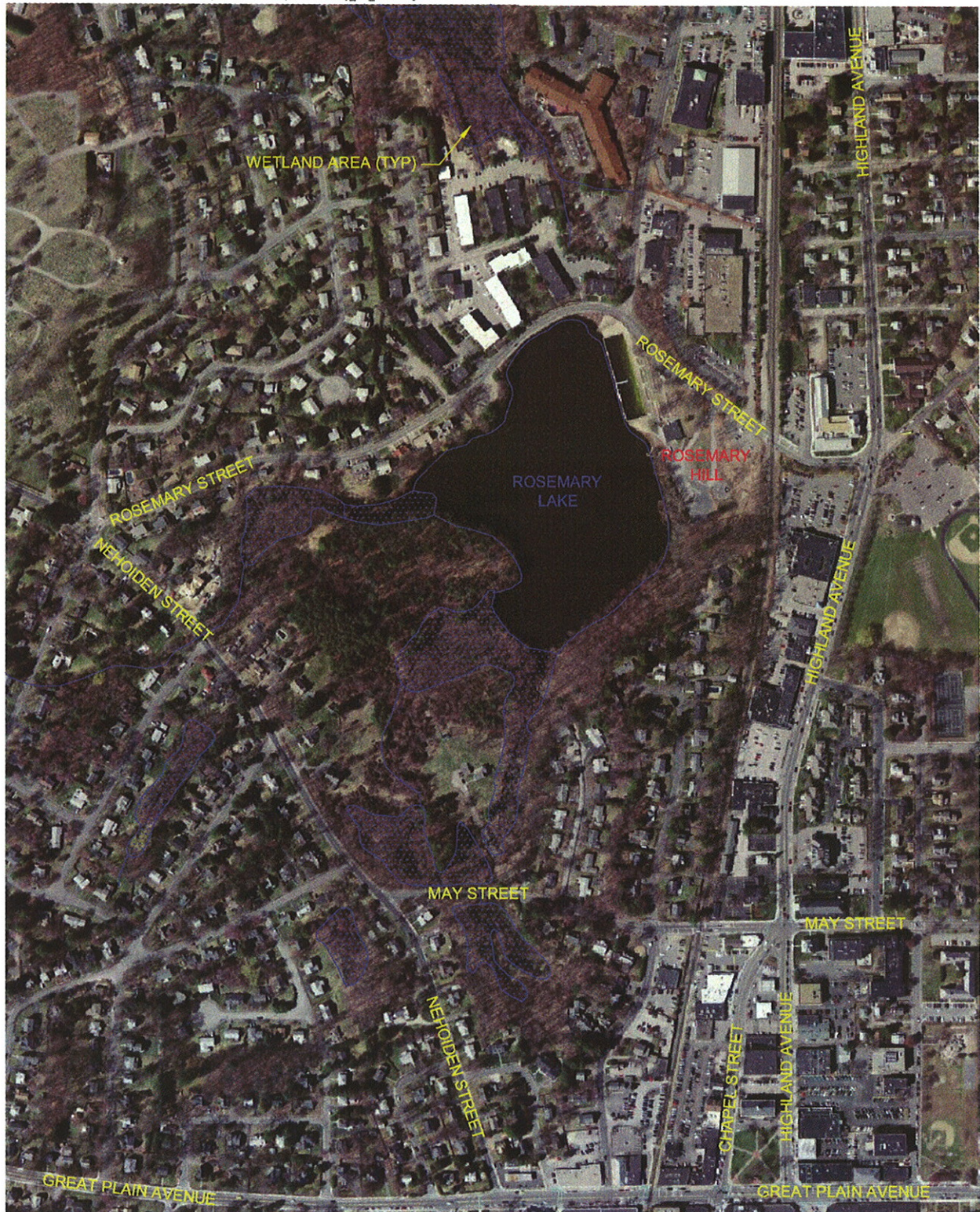


**TETRA TECH RIZZO**

Green's Field  
Needham, MA

Figure  
**1**





0 500 Feet

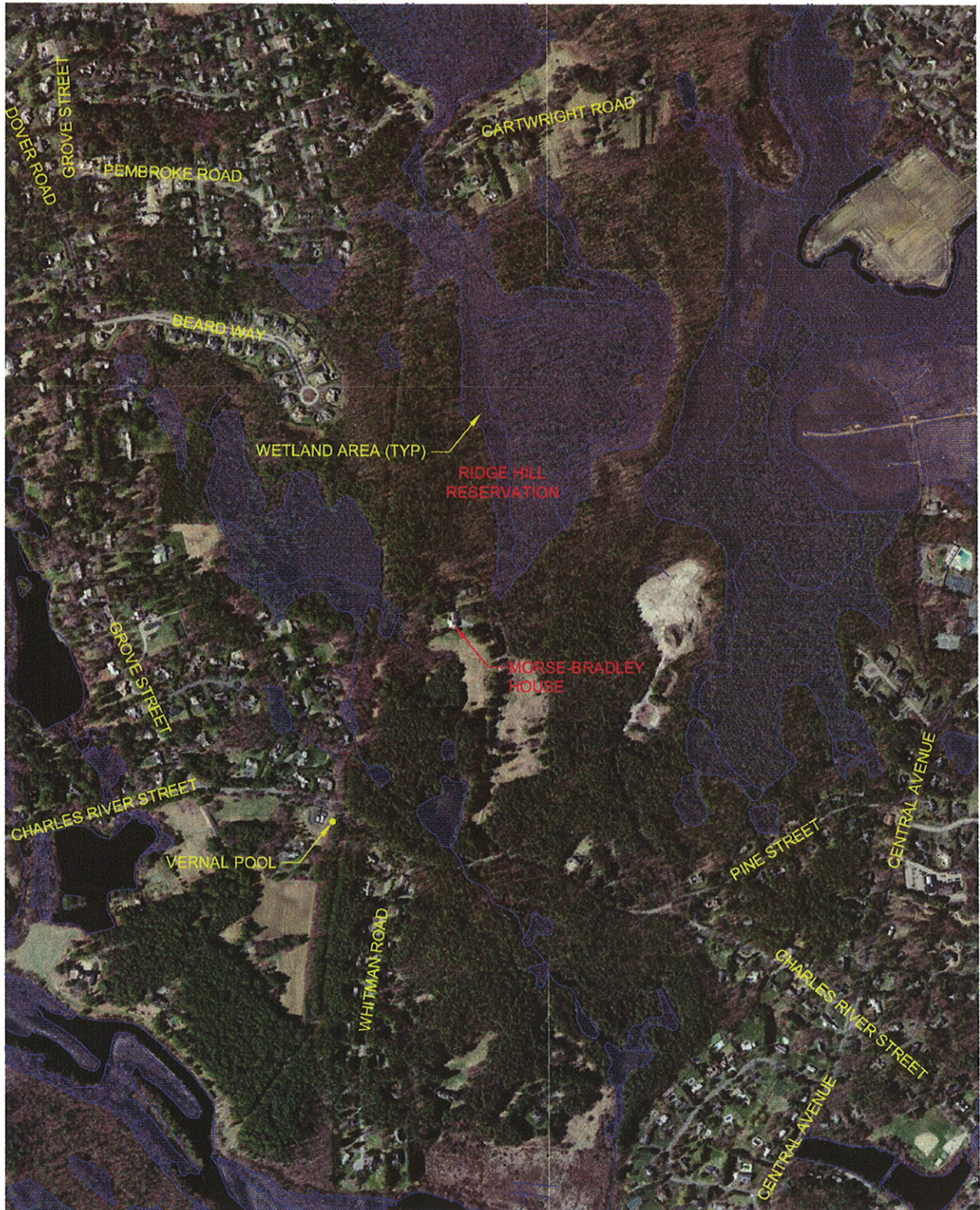


**TETRA TECH RIZZO**

Rosemary Hill  
Needham, MA

Figure  
**2**





0 1,000 Feet

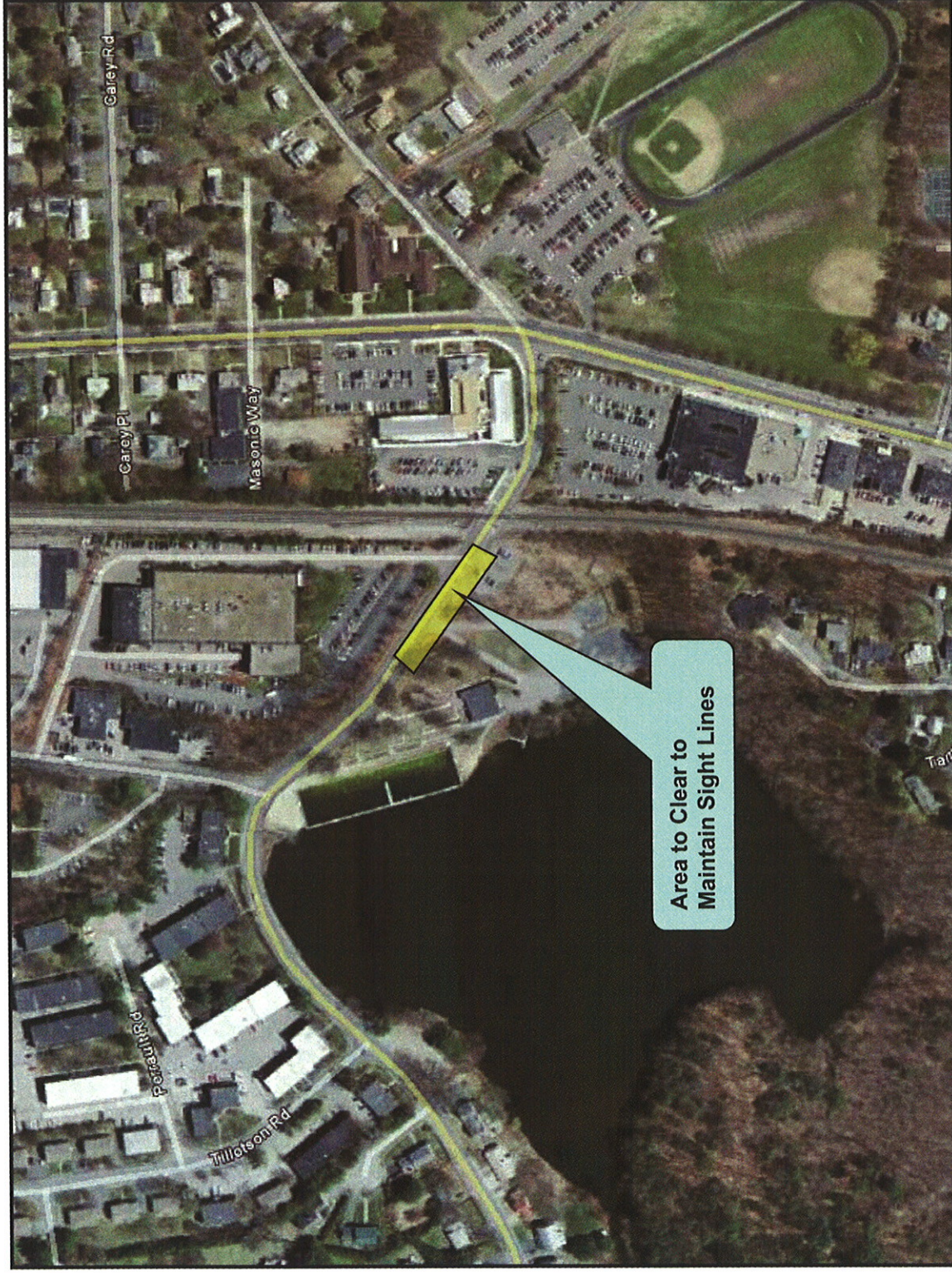


**TETRA TECH RIZZO**

Ridge Hill Reservation  
Needham, MA

Figure  
**3**





TETRA TECH RIZZO



Not to Scale

Vegetation at Rosemary Lake Site

Figure 4





TETRA TECH RIZZO



Not to Scale

Vegetation at Rigde Hill Site

Figure 5